REMARKS

Claims 1-26 are pending. Claims 1, 3-4, 6, 16, 23-24, and 26 stand objected to as having informalities. Claims 1-13 and 23-26 stand rejected under 35 U.S.C. § 112, ¶ 1 as failing to comply with the written description requirement. Claims 1-13, 15, and 23-26 stand rejected under 35 U.S.C. § 112, ¶ 2 as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,363,378 to Conklin in view of U.S. Patent No. 5,390,281 to Luciw et al. Claims 17-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,363,378 to Conklin in view of U.S. Patent No. 5,390,281 to Luciw et al. and U.S. Patent No. 6,122,628 to Castelli. Claims 1-11, 14-21, 23-24, and 26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over co-pending U.S. Patent Application Serial No. 09/654,660 in view of U.S. Patent Application Serial No. 09/512,963 and further in view of co-pending U.S. Patent Application Serial No. 09/615,726.

Reconsideration is requested. No new matter is added. The rejections are traversed. The specification is amended. Claims 1, 3-4, 6, 14, 17, 22-24, and 26 are amended. Claim 27 is added. Claims 1-27 remain in the case for consideration.

The Applicant is willing to file a terminal disclaimer to overcome the obviousness-type double patenting rejection over U.S. Patent Application Serial No. 09/654,660, once claims 1-11, 14-21, 23-24, and 26 are indicated as otherwise allowable.

The Applicant notes that claims 1-13, 15-16, and 23-26 were not rejected under 35 U.S.C. §§ 102 or 103 over any art. Instead, these claims were rejected only under 35 U.S.C. § 112, ¶¶ 1 and/or 2, and/or provisionally rejected under the judicially created doctrine of obviousness-type double patenting. The Applicant believes that, based on the amendments to the claims, these claims should now be patentable except for the provisional double patenting rejection.

The Applicant further notes that, although ¶ 11 on page 7 of the Office Action dated September 15, 2005 indicates that claim 22 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Conklin in view of Luciw and Castelli, no specific reason for rejecting claim 22 is provided. The Applicant is treating claim 22 as though it was rejected for the same reasons as in the Office Action dated November 3, 2004; if the Examiner intended a different reason for rejecting the claim, the Applicant would appreciate the Examiner's reason for rejecting claim 22.

The Applicant thanks the Examiner for initialing and returning copies of the IDSes submitted on April 10, 2001, March 6, 2002, November 15, 2004, and June 22, 2004.

OBJECTIONS

The Examiner objected to claims 1, 3-4, 6, 16, 23-24, and 26 as having informalities. The Applicant notes that the informalities the Examiner indicated claim 16 as having do not appear to be in that claim: specifically, claim 16 does not include the terms "concept" or "state vector", nor does claim 16 have 9 lines. The Applicant notes that claim 14 has these features, and has interpreted the claim objection as having been made to claim 14 instead of claim 16.

Claims 1, 3-4, 6, 14, 23-24, and 26 are amended to address the informalities noted by the Examiner, as well as some similar informalities not specifically identified by the Examiner. Accordingly, the Applicant believes claims 1, 3-4, 6, 14, 23-24, and 26 should no longer stand objected to as having informalities.

REJECTIONS UNDER 35 U.S.C. § 112

The Examiner rejected claims 1-13 and 23-26 under 35 U.S.C. § 112, ¶¶ 1 and 2 as failing to comply with the written description requirement and for being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. In related U.S. Patent Application Serial No. 09/512,963 ("the '963 application"), Examiner Spooner and the undersigned discussed a similar rejection. In the '963 application, the undersigned and Examiner Spooner agreed that the concept of "linear ancestor" was sufficiently described, and the specification could be amended to provide literal support for the term "lineal ancestor". As the '963 application is incorporated by reference into this application, there is support for amending the specification in this application in the same manner. A similar amendment to the specification is hereby presented, which should overcome the rejections of these claims under 35 U.S.C. § 112, ¶¶ 1 and 2.

The Examiner rejected claim 15 as lacking antecedent basis on lines 5-6 for the term "impact summary". The Applicant points out that antecedent basis for this term is provided on lines 4-5 of claim 15. The Applicant respectfully requests the Examiner withdraw the rejection of claim 15 under 35 U.S.C. § 112, ¶ 2 as being indefinite.

REJECTIONS UNDER 35 U.S.C. § 103(a)

The invention as recited in claim 14 is directed toward an apparatus for building a template specifying an emotional response to a content stream, the apparatus comprising: a computer; a dictionary stored in the computer including a plurality of concepts to form a directed set, only one concept identified as a maximal element, and a plurality of chains stored extending from the maximal element to each of the plurality of concepts; an intentional stance basis including a subset of the plurality of chains; for selected concepts in the dictionary, a state vector in a topological vector space corresponding to the selected concept wherein each state vector in the topological vector space includes at least one measure of how concretely the corresponding concept is represented in each chain in the intentional stance basis; a template including the state vectors in the topological vector space; and an action associated with the template.

In contrast, Conklin teaches an information retrieval system. Nodes, representing terminological concepts, are arranged into trees. A query is analyzed to determine query feedback terms, and corresponding terminological concepts are selected as query feedback nodes. Focal nodes are selected based on the topics, and a conceptual proximity is measured between the focal nodes and query feedback nodes. The query feedback nodes are then ranked based on conceptual proximity to the focal nodes.

In responding to the Applicant's arguments, the Examiner indicated that the claims do not recite a single maximal element in the directed set. The undersigned and the Examiner discussed a similar issue in the '963 application, where it was agreed that an amendment identifying only one element as the maximal element would clarify this point. Such amendment has also been made in this patent application, which the Applicant believes distinguishes the directed set of the claimed invention over the multiple trees of Conklin.

The Applicant would like to point out briefly that, while claim 26 describes multiple directed sets, each with maximal elements, this does not invalidate the argument that a single directed set has a single maximal element. As claim 26 makes clear, the impact summary is assembled using state vectors based on the second directed set, as compared with the template assembled using state vectors based on the first directed set; claim 8 provides for the topological vector space transformation to support comparison of the impact summary and the template.

Nevertheless, despite the presence of two directed sets in claim 26, the arguments presented previously are still valid. Within each directed set (how a dictionary is organized), there is one maximal element. The dictionary as a whole is used to assemble the template.

That is, to the extent concepts in the dictionary are selected to construct state vectors or are parts of the intentional stance basis chains, all concepts in the dictionary matter.

Compare this with Conklin's description of the knowledge base, beginning in column 10, line 23 and continuing through column 12, line 45. As has previously been discussed, Conklin organizes nodes into ontologies, which can be linked by cross-references. Each ontology can have a root, but there is no single maximal element for the entire knowledge base.

The reason this analysis is important is because the proper analogy to the dictionary of the claimed invention is the knowledge base of Conklin, and not the ontology. This point is made both with respect to documents (*see, e.g.*, column 6, lines 12-15 and 23-26) and to query terms (*see, e.g.*, column 6, lines 7-12 and 23-26). In both cases, topics or themes are identified, which are linked to categories in the *knowledge base*. Note that Conklin uses the term "knowledge base", and not "ontology"; this shows that Conklin refers to themes or topics as including all nodes in the knowledge base, regardless of the number of ontologies in the knowledge base. Conklin's focal nodes might ignore ontologies that do not include a particular theme or topic, but the construction of Conklin's focal nodes is not pertinent to the identification of themes or topics from documents or queries in Conklin. And since the selected concepts for which corresponding state vectors are created are selected from the dictionary, the dictionary of the claimed invention must correspond to the knowledge base of Conklin.

Thus, the fact that claim 26 describes multiple dictionaries can properly be analogized only to multiple knowledge bases in Conklin. And Conklin never even suggests the possibility of multiple knowledge bases. In fact, Conklin suggests quite the opposite: at column 10, lines 24-26, Conklin states that "the knowledge base 155 is the repository for all knowledge about languages and about the concrete and abstract worlds described by language in human discourse". If a single knowledge base holds "all knowledge about languages and about the concrete and abstract worlds described by language in human discourse", then the (singular) knowledge base stores all possible information, suitably represented (and potentially abstracted). But if one knowledge base stores all this information, then there is no need for a second knowledge base that might have different information.

The Applicant would also like to discuss the Examiner's point about the possibility of a degenerate knowledge base, with a single ontology. The Applicant acknowledges that in this situation, the knowledge base would have a single root node. But to interpret Conklin in this manner requires significantly modifying and limiting the operation of Conklin, which is

improper. Conklin states in column 11, lines 34-36 that the purpose of cross-references are to create mappings between categories that are not ancestrally related but are close ontologically. If a degenerate knowledge base with only one ontology were acceptable, then all elements would be ancestrally related, and cross-references would not be needed. As Conklin envisions using cross-references, interpreting Conklin to support the concept of a degenerate knowledge base is equivalent to forcing a square peg into a round hole: the Examiner is modifying Conklin to fit the Examiner's specific need, and ignoring Conklin's intent. This is improper modification of Conklin. Further, as this interpretation of Conklin was provoked by an attempt to reject a claim in this patent application, the Examiner is also using hindsight in rejecting the claims, which is also improper.

The Examiner also states that, because the claimed invention did not recite that there could only be one maximal element for the set, "it should be clear that Conklin teaches state vectors, as presented in the previous rejections". Even if the multiple trees of Conklin could be considered analogous to the directed set of the claimed invention (which the Applicant disputes), the Applicant fails to follow the Examiner's leap of logic that implies Conklin teaches state vectors.

The technique to construct state vectors, which is explicitly claimed in claim 14, involves using intentional stance basis chains within the directed set and measuring how concretely the corresponding concept is represented in each intentional stance basis chain. On top of that, each chain is a specific set of directed links extending from the maximal element to a specific concept in the directed set. As argued above, Conklin does not teach or suggest that there is only one maximal element. And as argued previously, Conklin does not teach or suggest any significance to paths through his trees, or selecting specific "paths" to serve as basis chains. The Examiner is interpreting Conklin based on the claimed invention, which is impermissible hindsight. Therefore, Conklin does not teach the basic elements needed to construct state vectors.

Beyond that, Conklin's discussion about weights for nodes are quite different from measuring how concretely each concept is represented in the basis chain. The definition of "measurement" can be found in the '963 application at, for example, page 15, line 24 through page 16, line 24 (which also shows the construction of a state vector). In short, this measurement involves identifying the concept in the chain that is furthest from the maximal element yet is still an ancestor (or predecessor) concept to the concept being measured. Conklin does not teach or suggest anything even approaching this feature. But since these

measurements are a necessary precursor to constructing the state vector, Conklin cannot teach or suggest state vectors as claimed.

In the response to the Office Action dated November 3, 2004, the Applicant presented an argument concerning the terms "apple" and "Thursday". The Examiner responded that a common parent element could be "words". The Applicant apologizes for any confusion created by the analogy. The Applicant was not trying to describe two terms that could never be compared in any manner, but rather was trying to show two terms that a person on the street would find very difficult to compare. Conklin's node construction, as shown for example in FIG. 6, are constructed with a logical pattern, and only show comparisons between nodes that, in Conklin's view are comparable. For example, there is no way in the directed graph shown in FIG. 6 to compare "Geography" with "Visual Arts": they are in different ontologies, with no overarching element that combines them in the same way, for example, that "Visual Arts" and "Tourism" are both covered by "Leisure and Recreation".

The Applicant's point is that FIG. 6 of Conklin shows without question that Conklin envisions the possibility that the directed graph lacks any single overarching concept. FIG. 3 of Conklin drives this point home even more certainly, where the two ontologies 220 and 230 have absolutely no commonality or cross-reference points at all. Clearly, then, Conklin does not require that every pair of concepts be comparable, much the same as how an ordinary person on the street would have difficulty finding any common ground between the terms "apple" and "Thursday". (The Examiner is also using his special knowledge of the claimed invention and of Conklin in pointing out that both terms are "words": the Applicant posits that the average person on the street would not consider the fact that both terms are "words" to be a point of comparison.)

The following argument is copied (with slight modification) from the response to the Office Action dated November 3, 2004:

> There are several apparent differences between the invention as recited in claim 14 and Conklin. First is that the claimed invention uses a dictionary organized as a directed set. As explained on page 4, line 30 to page 5, line 3 of the specification, a directed set is a different concept than a tree. Among other (mathematically equivalent) definitions, a tree is a set of nodes connected by edges, the tree having no self-loops and such that between any two nodes in the tree there is *exactly one* path between the two nodes. (*See, e.g.*, Shimon Even, GRAPH ALGORITHMS 22 (1979), a copy of which has been previously submitted.) A directed set has no such limitation. Rather, a directed set is a set of nodes connected by edges, where there can be any

number of distinct paths between the maximal element and any other element in the directed set. Indeed, as shown in the FIG. 2 of the instant application, there are two different paths between "set" and "relation." One path goes through "product," the other path goes through "subset." Since a tree cannot have multiple paths between a pair of nodes, the trees of Conklin do not anticipate the directed set of the instant invention.

Although Conklin does not describe his trees as directed trees, even if Conklin's trees were considered to be directed trees, they would not teach the concept of a directed set. One definition of a directed tree is a set of nodes connected by edges, where the set has a root from which there is a *unique* directed path to every other node. (*See, e.g.*, Shimon Even, GRAPH ALGORITHMS 30 (1979), a copy of which has been previously submitted.) Since this definition still limits the directed tree to having a unique path between the root and every other node, a directed tree does not anticipate the directed set of the instant invention either.

A second difference is that Conklin supports the concept of multiple trees. This is shown in both figures 3 and 6 of Conklin, and explained at column 7, lines 39-50 (among other places). Each tree is an "independent ontology." But a consequence of having separate trees is that there can be no individual maximal element, as claimed in the instant invention. At best, each tree can have a maximal element. Without anything tying the different trees together, there is no single maximal element that embraces every concept in every tree.

By using separate trees for different ontologies, Conklin teaches a system wherein some elements cannot be compared. For example, referring to FIG. 6 of Conklin, there is no way to compare Western Europe with Tourism, as they are in different ontologies. This would be akin to asking a person on the street to generally compare the concept "apple" with the concept "Thursday": there is no common reference point by which the concepts can be compared. In contrast, in the directed set of the instant invention, every pair of concepts has at least one common ancestor. At worst, every pair of elements is related through the maximal element. This makes it possible to compare disparate concepts such as "iguana" and "man."

Thus, it should be clear that Conklin does not teach state vectors as used in the claims. To begin with, Conklin does not teach chains as described. The chains extend from the maximal element to a concept. But Conklin lacks the feature of a maximal element. Further, Conklin only describes categorizations; the mere fact that

there is a (partial) hierarchy among the nodes of Conklin does not mean that Conklin teaches chains. And because the vectors in the claims measure how closely a concept is represented in each basis chain (and Conklin does not teach or suggest chains as described), Conklin cannot teach or suggest state vectors as used in the claims.

In addition, the Examiner acknowledges that Conklin does not teach assembling the state vectors into a template or associating an action with the template. The Examiner refers to Luciw for these features. Luciw teaches a means of generating information based on a familiar series of computer events. It observes and interprets user and system behavior and then guesses what should be done based on that observation. However, instead of using a directed set to generate topological state vectors, Luciw uses a frame-based approach and look-up tables.

Because Luciw does not use templates with state vectors, it cannot be said to teach the assembling of state vectors into a template. The Examiner argues that Luciw teaches "assembling information" into the template, and that this makes obvious assembling state vectors into a template. But for this reasoning to have any possible justification, the concept of state vectors must be taught in one of the cited references. As argued above, Conklin fails to teach or suggest state vectors as claimed; thus, Luciw would have to teach or suggest state vectors. But Luciw's use of his template, as shown in FIG. 4a, uses the template as a form. Forms are not vectors, and Luciw makes no suggestion that the forms can be represented as vectors. In other words, Luciw does nothing more than use a word ("template") in common with this application; even if the general idea behind the word is quasi-similar, the actual use is quite distinct. Thus, Luciw's "template" does not include state vectors, and Luciw does not teach or suggest state vectors anywhere.

As neither Conklin nor Luciw teach or suggest a dictionary organized as a directed set with only one maximal element, intentional stance basis chains, state vectors, or a template, the combination of Conklin and Luciw fails to make obvious claim 14. Accordingly, claim 14 is patentable under 35 U.S.C. § 103(a) over Conklin in view of Luciw, and therefore claims 14-16 are allowable.

The invention as recited in claim 17 is directed toward an apparatus for comparing a template with a content stream to determine whether the content stream provokes an emotion response, the apparatus comprising: a computer having access to the content stream; a template in a topological vector space stored in the computer, the template including a first

plurality of state vectors in a topological vector space, an associated action, and a threshold distance, where each of the first plurality of state vectors in the topological vector space corresponds to a concept in a directed set and includes at least one measure of how concretely the corresponding concept is represented in each of a plurality of chains of an intentional stance basis in the directed set; means for capturing an impact summary for the content stream, the impact summary including a second plurality of state vectors in the topological vector space; and means for comparing the impact summary with the template.

The invention of claim 18 is directed toward an apparatus according to claim 17, wherein the means for comparing the impact summary with the template includes means for measuring a distance between the impact summary and the template.

The invention of claim 20 is directed toward an apparatus according to claim 19, wherein the means for measuring a distance between the impact summary and the template includes means for measuring a Euclidean distance between the impact summary centroid vector and the template centroid vector.

In responding to the arguments regarding Castelli, the Examiner indicates that he "cannot locate in the claim where the applicant claims measuring a distance between a plurality of vectors using the well-known Euclidean method of measuring distance in a spatial environment". The Applicant apologizes for not being more precise. Claim 17 does not mention measuring a distance. But claim 17 does recite means for comparing the impact summary with the template: dependent claims, such as claims 18 and 20, further refine this feature to describe that this comparison can be done by measuring a distance between the impact summary and the template. The only form of comparison Castelli teaches is Euclidean distance. As argued previously, Euclidean distance is only useful to measure distance between two individual vectors, and so cannot be used to compare the impact summary and the template (which are sets of state vectors).

But it also appears that the Examiner misinterpreted the Applicant's arguments. The Applicant was not asserting that the Euclidean distance metric could be used to measure distance between sets of vectors: in fact, the Applicant was asserting that the Euclidean distance metric *could not* be used in that manner. Claim 20, while describing measuring Euclidean distance, measures the distance between two specific vectors: centroid vectors. Even in claim 20, the Euclidean distance metric is still not being used to directly measure a distance between sets of state vectors, such as the impact summary and the template, for the same reasons argued above. Instead, centroid vectors are constructed for the impact summary and the template: the distance between these centroid vectors can then be measured

using Euclidean distance. (The Applicant also notes that Castelli does not teach or suggest constructing a centroid vector, even though a centroid vector stores less information than the original set of vectors, and Castelli does teach that his cluster construction results in data loss.)

In contrast, claim 18 describes measuring distances between the impact summary and the template, which are pluralities of vectors, for which Euclidean distance could *not* be directly used. That was the Applicant's point: measuring distance, as described in claim 18, could *not* be measured using Euclidean distance. Thus, the Applicant believes the arguments previously presented are correct.

In any event, claim 17 has been amended to emphasize the fact that the state vectors include measures of how well concepts are represented in basis chains, as presented in independent claims 1, 6, 14, and 23-24. As argued above, neither Conklin nor Luciw teach or suggest these features, and the Applicant asserts that Castelli also fails to teach or suggest this features. Accordingly, as claims 17-18, 20, and 22 all describe features not taught or suggested by Conklin, Luciw, or Castelli, claims 17-18, 20, and 22 are patentable under 35 U.S.C. § 103(a) over Conklin in view of Luciw and Castelli, and therefore claims 17-22 are allowable.

The following argument is copied (with slight modification) from the response to the Office Action dated November 3, 2004:

> As admitted by the Examiner, neither Castelli nor Luciw teach a template or an impact summary. Therefore, for the rejection of claims 17-22 to be proper, Castelli needs to teach this element.
>
> Castelli is directed toward a system for multi-dimensional data clustering and data reduction. Noting that "multidimensional indexing is fundamental to spatial databases" (column 1, lines 28-29), Castelli proposes a way to reduce the number of dimensions needed to represent data clusters. Castelli teaches using this reduced dimensionality clustering to improve database query performance.
>
> To begin with, the method taught by Castelli requires either the loss of data, or additional space to store the data. For example, as shown Fig. 4 of Castelli, reducing the data from three dimensions to two results in point 404 (the projection of point 401 onto two dimensions) appearing to be closer to point 405 (the projection of point 402) than point 406 (the projection of point 403). But in three dimensions, point 403 is closer to point 402 than point 401. Thus, there is data loss. Castelli even acknowledges that there is data loss, in that "the set of corresponding eigenvalues

account for at least a fixed percentage of the total variance, where for instance the fixed percentage can be taken to be equal to 95%" (column 11, lines 50-53). In other words, the reduced dimension data is known to be less accurate than the original data.

Castelli addresses this data loss by defining the clusters essentially in the higher-order space first, then projecting the clusters into the lower-order space. But even so, the data stored in the unprojected dimensions is lost. The only way to avoid this loss is to define the clusters along many different projections, as shown in Fig. 2. But then three different clusters have to be stored, whereas without data reduction, only 1 cluster is needed. This suggests that Castelli's data reduction approach is not functional.

Moving to addressing the rejection, the vectors taught by Castelli are distinguishable from the vectors in the claims. As clearly described (see, for example, claims 6 and 24), the state vectors are constructed using chains. Castelli has no analog to the chains of the claims. Clearly, then Castelli cannot teach state vectors as constructed.

But even if Castelli taught state vectors as claimed, Castelli still fails to teach comparing impact summaries and templates. As should now be clear, both impact summaries and templates can include multiple vectors. That means that comparing them requires, in some manner, to compare sets of vectors. The only "measure" that Castelli teaches is Euclidean distance, as described in equation 7 in column 9. (All the other distance equations are variants of this.) But Euclidean distance can only measure a distance between two vectors: it cannot measure a distance between two sets of vectors.

It is true that at column 15, lines 25-28, Castelli discusses the distance between a search template and cluster boundaries. But the distance Castelli is measuring here is nothing more than the minimum distance between the search template and the boundary of a cluster. The search template is still a single vector (as shown in Fig. 5: template 501 is a single vector), so Castelli is still not comparing two sets of vectors. Accordingly, Castelli fails to teach or suggest either state vectors or comparing impact summaries and templates (both of which include multiple state vectors). Accordingly, claim 17 is patentable under 35 U.S.C. § 103(a) over Luciw in view of Castelli, and therefore claims 17-22 are allowable.

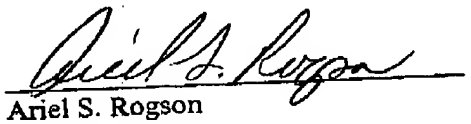
The invention of claim 22 is directed toward an apparatus according to claim 17, wherein: each of the second plurality of state vectors in the topological vector space corresponds to a second concept in a second directed set and includes at least one measure of how concretely the corresponding second concept is represented in each of a plurality of second chains of a second intentional stance basis in the second directed set; and the apparatus includes a transformer for performing a topological vector space transformation on the impact summary from the second intentional stance basis to the intentional stance basis.

In the Office Action dated November 3, 2004, the Examiner argued that Castelli taught a transformation matrix and eigenvalues acting as a basis. The Applicant notes that claim 22 recites two bases, not one basis, and the Examiner has not indicated that Castelli taught two different bases. In any event, as claim 22 has been amended (and is dependent from amended claim 17), the Applicant believes that the specifics about the state vectors are not taught or suggested by Castelli any more than they are taught or suggested by Conklin or Luciw. Accordingly, claim 22 is patentable under 35 U.S.C. § 103(a) over Conklin in view of Luciw and Castelli, and is therefore allowable.

For the foregoing reasons, reconsideration and allowance of claims 1-27 of the application as amended is solicited. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

MARGER JOHNSON & McCOLLOM, P.C.



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